

engineers planners

surveyors

environmental scientists

> landscape architects

October 14, 2010 NS Account No. 00.07897.002.01

Amy McLeod, E.I. DWSIRLF Project Manager MSDH, Division of Water Supply P.O. Box 1700 Jackson, MS 39215-1700

REFERENCE:

CULKIN WATER DISTRICT

WARREN COUNTY, MS

TIFFINTOWN ROAD WATER TRANSMISSION IMPROVEMENTS

GREEN PROJECT RESERVE

SRF DWI-H280016-04

Dear Amy:

On behalf of our client the Culkin Water District (CWD), we are submitting the following business case for water and energy efficiency in regards to the referenced project.

CWD is comprised of a number of former water associations consisting of aging pipe. As a result, they can experience high unaccounted for water loss partially due to the leaks within the old systems. Historical information from monthly usage reports indicates a range of water loss from 10-30 percent. CWD has recently been pumping to the system approximately 60 million gallons per month. At 30% this equates to 18 million gallons of unaccounted for water.

A record search for work orders in the project area yielded there were 18 events that CWD was called to repair. At an estimated water loss of 1-20 gpm per leak it is assumed that the water loss per leak is 360 - 14,400 gpm just for a 6-12 hour period it goes unnoticed. This amount could be greater if the location of the leak is in an area where it goes unnoticed for days.

Therefore, the CWD proposes to install approximately 27,000 linear feet of 12 inch water main. With the installation of this line the CWD will be able to remove from service aging 2, 4, and 6 inch waterline. The construction budget for this project is estimated to be \$3,210,000.00.

In addition to providing a more reliable water line, the increase in line size will also serve in a reduction in the head loss which will affect the pump energy. With an estimated flow of 100 gpm flowing through the existing waterlines a head loss of approximately 67 feet occurs. This equates to annual pump energy usage of 15,277 kwh.² With the new line at an estimated flow of 250 gpm, the head loss 8.9 feet, the annual pump energy usage is 5,056 kwh. A difference of 10,221 kwh annually.

The installation of the 12 inch line should provide an environmental benefit reducing continuous leaks thereby saving thousands of gallons of water per year in addition to a reduction in the distribution pump energy usage.

If you have any questions or need additional information, please call.

Sincerely,

Neel-Schaffer, Inc.

John W. Gahring, Jr., P.E., BCEE

Engineer II

Environmental Engineering

Attachments

pc: John Gunn

File

Notes:

- 1. Historical data for work orders was reviewed for years 2007-2010.
- 2. Pump power formula: kW = 0.75 *gpm*(ft of head)/(3,960*(pump efficiency). The pump efficiency is 73%. Annual consumption was calculated by multiplying by 8,760 hours per year.

CULKIN WATER DISTRICT

Water System Improvements

8/2/2010

PRELIMINARY COST ESTIMATE

12 inch Water Main to Bovina

Description	Quantity	Units	Ĺ	Init Cost	Total Cost
Bovina Main					
Sitework and Erosion Control	1	L.S.	\$	37,000	\$ 37,000
12" Ductile Iron Water Main	32000	L.F.	\$	80	\$ 2,560,000
12" Gate Valves	15	EA.	\$	1,200	\$ 18,000
Air Release Valve and Vault	4	EA.	\$	7,000	\$ 28,000
Fire Hydrants	12	EA.	\$	2,500	\$ 30,000
Connection to Existing Water Main	2	EA.	\$	2,500	\$ 5,000
Tiffintown Bored Crossing12" DIP w/ 24" Casing	100	L.F.	\$	400	\$ 40,000
I-20 Bored Crossing 12" DIP w/ 24" Casing	300	L.F.	\$	400	\$ 120,000
US-80 Bored Crossings 12" DIP w/ 24" Casing	200	L.F.	\$	400	\$ 80,000
	\$ 2,918,000				
Contingencies (10%)	1	L.S.			\$ 292,000
C	ONSTRUCTION	ON TOTAL			\$ 3,210,000
Engineering Design and Construction Fees	1	L.S.			\$ 368,325
	PROJE	CT TOTAL			\$ 3,578,325

^{**} This estimate represents the estimated construction cost of installing a 12" distribution main from intersection of Tiffentown Road and Tiffinton Road to the proposed Bovina Tank. The length of pipe needed is based on using the existing tank site. The distribution main will be bored under I-20 at Bovina. The main will be needed following the construction of the Bovina Tank.

ACCOUNT: 7 / 2000 -DATE: 091010 08:34 CUST #: 4094 JOHN MCHAN WORK ORDER #: 24440 CUSTOMER: 3250 TIFFENTOWN RD. ADDRESS: PHONE: 636-8821 BY: Mis METER #: 94548178 METER READING: 1329120 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 091010 TIME REQUIRED: LEAK ACROSS THE STREET IN DITCH NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE:_____ TIME:____ UNIT:____ TURN OFF ___ TURN ON ___ UNLOCK & LEAVE OFF___ READ & LEAVE ON____ INSTALL TAP/METER SIZE METER READING____ OLD METER S/N____ NEW METER S/N____ METER READING REMARKS:

DATE: 070610 CUST #:	08:22 4090			: 7/	
CUSTOMER:	JANE R. WARNO	CK WO	RK ORDER	#: 2360	3
ADDRESS:	3046 TIFFENTOW	N RD. PHO	ONE: 601	. 636-2625	BY: Mis
METER #:		METER READI	NG:	124800	
WORK REQUEST OR C	OMPLAINT: DATE	E REQUIRED: 070	0610 TI	ME REQUIRE	D:
LEAK					
NEW ADDRESS:				* * N== N=in	TOWN THE TAXABLE PROPERTY.
LOCATION:					
REMARKS:					-717 - 73 - 73 - 12 - 12 - 12 - 12 - 12 - 12 - 12 - 1
,					
I PERFORMED THE FOI	LLOWING: DATE:	TIME:		UNIT:	
TURN OFF TUR					
READ & LEAVE ON	INSTA	LL TAP/METER	- SIZE		
OLD METER S/N		METER RE.	ADING		
NEW METER S/N					
REMARKS:				, ,	
				, , , , , , , , , , , , , , , , , , , ,	
•					
	,	***************************************			
MATERIALS USED:	****		TAMPAGÈ NA.	***************************************	
، برندری پیستیدیوست			«		

DATE: 032410 CUST #:	14:24 4094	A	CCOUNT:	7 / 2000 -
	JOHN MCHAN	WORK	ORDER #:	22663
ADDRESS:	3250 TIFFENTOWN	RD. PHONI	g: 636-8821	BY: Mis
METER #:	94548178	METER READING	: 13042	40
WORK REQUEST OR	COMPLAINT: DATE	REQUIRED: 0324	10 TIME RE	EQUIRED:
LEAK				
NEW ADDRESS:				
LOCATION:				
REMARKS:				
	- ideNessia			-
Section (Section 1)				
——————————————————————————————————————		State ites management and the state of the s		
I PERFORMED THE FO	OLLOWING: DATE:	TIME:	UI	NIT:
TURN OFF TU	rn on unlock	& LEAVE OFF		
READ & LEAVE ON	INSTAL	l tap/meters	IZE	
OLD METER S/N	<u> </u>	METER READ	ING	
NEW METER S/N		METER READ	ING	and the second second
REMARKS:				
ويورج المساعد ويورج المساعد والم		A Marie Control of the Control of th		
MATERIALS USED:				

ACCOUNT: 7 / 1890 - 1 DATE: 060909 16:14 CUST #: 4083 CUSTOMER: 4083
CUSTOMER: PAYTON FULGHAM WORK ORDER #: 19117 2636 TIFFENTOWN RD. PHONE: 634-1401 BY: PY2 ADDRESS: 38717386 METER READING: 2275300 METER #: WORK REQUEST OR COMPLAINT: DATE REQUIRED: 060909 TIME REQUIRED: CHECK FOR POSSIBLE LEAK NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: _____ UNIT:____ UNIT:___ TURN OFF ___ UNLOCK & LEAVE OFF ___ INSTALL TAP/METER SIZE READ & LEAVE ON METER READING OLD METER S/N_____ METER READING NEW METER S/N____

REMARKS:

ACCOUNT: 7 / 2000 -DATE: 072009 13:03 CUST #: 4094 CUSTOMER: 4094
CUSTOMER: JOHN MCHAN WORK ORDER #: 19800 3250 TIFFENTOWN RD. PHONE: 636-8821 BY: STA ADDRESS: 1262280 METER READING: METER #: 94548178 TIME REQUIRED: WORK REQUEST OR COMPLAINT: DATE REQUIRED: REPAIR LEAK - CUST. REPORTED A LEAK BY OR NEAR THE METER AT THE ROAD NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF TURN ON UNLOCK & LEAVE OFF INSTALL TAP/METER SIZE READ & LEAVE ON METER READING OLD METER S/N_____ METER READING NEW METER S/N_____

REMARKS:

DATE: 070909 CUST #:			ACC	OUNT:	7 /	3020	- 2
CUSTOMER:	JEFFERY & LOI	RI TAYLOR	WORK O	RDER #:	1946	18	
ADDRESS:	3875 TIFFENTOW	N RD.	PHONE:	601-619	-1514	BY:	STA
METER #:	98493115	METER RI	EADING:	1520	660		
WORK REQUEST OR	COMPLAINT: DAT	'E REQUIRED:	070909	TIME R	EQUIRE	D:	
LEAK -	CUST CALLED DAVID						
NEW ADDRESS:					*****		
LOCATION:	V 2.77.072 /						.
REMARKS:	11 A NR 1 B 48 A 14 A			NF T-1-1-F			<u>.</u>
-		. ,			te e		
			, ,				
					. 		
I PERFORMED THE F	OLLOWING: DATE:_	Т	IME:	U	MIT:		
TURN OFFTU	IRN ON UNLO	CK & LEAVE O	FF				
READ & LEAVE ON		ALL TAP/METER	RSIZ	${f E}$			
OLD METER S/N		METEI	READING	3			
NEW METER S/N		метег	R READING	3			
REMARKS:							
	<u>.</u>						
MATERIALS USED:				. <u></u>			
							_
-					11 - 111	V	-

DATE: 110408 ACCOUNT: 7 / 3030 - 4 10:29 CUST #: 11909 WORK ORDER #: 17300 CUSTOMER: BRANDY BOYD ADDRESS: 3875-A TIFFENTOWN ROAD PHONE: 601 636-2687 BY: STA METER #: 99598319 METER READING: 255450 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 110408 TIME REQUIRED: leak NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: ____ TIME: ____ UNIT: ____ TURN OFF TURN ON UNLOCK & LEAVE OFF READ & LEAVE ON____ INSTALL TAP/METER SIZE OLD METER S/N_____ METER READING_____ METER READING NEW METER S/N_____ REMARKS: MATERIALS USED:

ACCOUNT: 7 / 3040 - 1 DATE: 090408 16:46 CUST #: 4154 DAVID W CHILDERS WORK ORDER #: 16743 CUSTOMER: 3877 TIFFENTOWN ROAD PHONE: 636-4564 BY: MAR ADDRESS: 64876393 METER READING: 83320 METER #: WORK REQUEST OR COMPLAINT: DATE REQUIRED: 090408 TIME REQUIRED: LEAK IN DRIVEWAY NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF ___ TURN ON ___ UNLOCK & LEAVE OFF___ READ & LEAVE ON____ INSTALL TAP/METER SIZE METER READING OLD METER S/N METER READING_____ NEW METER S/N

MATERIALS USED:

REMARKS:

CUSTOMER:	JEFFER	Y & LORI	TAYLOR	WORK OR	DER #:	1.6674		
ADDRESS:	3875 TI	FFENTOWN	RD.	PHONE:	601-61	9-1514	BY:	DEB
METER #:	9849311	5	METER RE	ADING:	1357	220		
WORK REQUEST C	R COMPLAINT:	DATE	REQUIRED:	082108	TIME	REQUIRED	:	
	ON GRAVEL ROZ PINE TREES ON							
NEW ADDRESS:					1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			
LOCATION:								······································
REMARKS:			Months 1 1 1 1 1 1					
مف	<u> </u>					,		····
			•					
_				<u> </u>				
~~ ~~~				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
I PERFORMED THE	FOLLOWING:	DATE:		ME:		UNIT:		
TURN OFF	TURN ON	UNLOCE	G LEAVE OF	'F'				
READ & LEAVE ON		Instai	L TAP/METER	SIZE	I			
OLD METER S/N	and the second s		METER	READING		·		
NEW METER S/N	,,,		METER					
REMARKS:								-
							•	
MATERIALS USED:								
								_
			-					_
								_

ACCOUNT: 7 / 3020 - 2

DATE: 082108

CUST #:

14:32

10547

DATE: 052808 16:16 ACCOUNT: 7 / 1620 - 2 CUST #: 9837 CUSTOMER: 905/ WORK ORDER #: 15793 2211 TIFFENTOWN ROAD ADDRESS: PHONE: 661-7660 BY: MAR METER #: METER READING: 16420 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 052808 TIME REQUIRED: LEAK - PER READER NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF TURN ON UNLOCK & LEAVE OFF READ & LEAVE ON____ INSTALL TAP/METER SIZE OLD METER S/N____ METER READING NEW METER S/N_____ METER READING_____ REMARKS:

ACCOUNT: 7 / 410 -DATE: 111507 09:54 CUST #: 3941 CUST #: 3941 CUSTOMER: EDDIE SMITH WORK ORDER #: 14234 ADDRESS: 905 TIFFENTOWN RD. PHONE: 636-5110 BY: PY2 METER #: METER READING: 1592680 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 111507 TIME REQUIRED: NO WATER/ HAS BEEN LOW/ NOW NONE NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF TURN ON ____ UNLOCK & LEAVE OFF___ READ & LEAVE ON___ INSTALL TAP/METER SIZE OLD METER S/N_____ METER READING____ NEW METER S/N METER READING____ REMARKS:

DATE: 103107 CUST #: CUSTOMER:	10:05 10547 JEFFERY &	LORI TAYI			7 / 3020 - 2 14116
ADDRESS:	3875 TIFFEN	TOWN RD.	PHONE:	601-619-	-1514 BY: MAR
METER #:	98493115	М	ETER READING:	12063	10
WORK REQUEST OR COM	PLAINT:	DATE REQU	TRED: 103107	TIME R	EQUIRED:
LEAK - NOT	TOO BAD				
NEW ADDRESS:					A LANGE CONTRACTOR OF THE CONT
LOCATION:				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	A PART OF THE PART
REMARKS:					
		auras protontino de la com			
I PERFORMED THE FOLLO	OWING: DAT	E:	TIME:	<u> </u>	TIN
TURN OFF TURN	ONU	NLOCK & L	EAVE OFF		
READ & LEAVE ON	I	nstall ta	p/metersi	ZE	
OLD METER S/N			METER READI	NG	
NEW METER S/N	****		METER READI	ng	
REMARKS:					
Winderso .				,	
AMPIANA.					
REPARTS.		A STATE OF THE STA			
ABPARAS.		-			
MATERIALS USED:					

ACCOUNT: 7 / 3020 - 2

DATE: 100207 CUST #:	5367					UNT:			_
CUSTOMER:	WARREN	COUNTY	PARK	COMMI	SNOWN OR	DER #:	139	10	
ADDRESS:	1566 TIFF	ENTOWN	RD.		PHONE:	634173	€	BY:	MAR
METER #:	33755804		ME	rer re	ADING:	789	960		
WORK REQUEST OF	R COMPLAINT:	DATE	REQUI	RED:	1,00207	TIME :	REQUIR:	ED:	
leak -	NEAR GOLF COU	IRSE							
NEW ADDRESS:				 -					
LOCATION:	1					· · · · · · · · · · · · · · · · · · ·			
REMARKS:		·							
	,								
Processor					<u></u>				
<u> </u>		, <u></u>				jerrej misal (2013)			
I PERFORMED THE	FOLLOWING: DA	ATE:		T	IME:		UNIT:_		
TURN OFF	TURN ON	UNLOCK	& LE	AVE OF	F				
READ & LEAVE ON_	···	INSTAL	L TAP	/METER	SIZI	E			
OLD METER S/N				METER	READING	3	•		
NEW METER S/N				METER	READING	3			
REMARKS:									_
								· · · · · · · · · · · · · · · · · · ·	_

DATE: 102907 12:59 ACCOUNT: 7 / 3040 - 1 CUST #: 4154 DAVID W CHILDERS CUSTOMER: WORK ORDER #: 14097 3877 TIFFENTOWN ROAD PHONE: 636-4564 BY: MAR ADDRESS: METER #: 64876393 METER READING: 52770 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 102907 TIME REQUIRED: LEAK - RUNNING DOWN RD NEW ADDRESS: LOCATION: REMARKS: والربيب والمستواط والمستقط والمتال والمستواط الأقاط والمواج والمستقط فالمتاب والمتاب و I PERFORMED THE FOLLOWING: DATE: _____ TIME: ____ UNIT: TURN OFF TURN ON UNLOCK & LEAVE OFF READ & LEAVE ON___ INSTALL TAP/METER SIZE OLD METER S/N____ METER READING NEW METER S/N____ METER READING REMARKS:

CUST #: 10547 JEFFERY & LORI TAYLOR WORK ORDER #: 12678 CUSTOMER: PHONE: 601-619-1514 BY: MAR 3875 TIFFENTOWN RD. ADDRESS: METER #: 98493115 METER READING: 1073190 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 050707 TIME REQUIRED: BET 1 & 2 DRIVEWAY ON LEFT - LEAK IN WOODS NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF ___ UNLOCK & LEAVE OFF___ INSTALL TAP/METER SIZE READ & LEAVE ON METER READING OLD METER S/N METER READING NEW METER S/N REMARKS: MATERIALS USED:

DATE: 050707

09:00

ACCOUNT: 7 / 3020 - 2

CUST #: 4087 LARRY A BARNES SR WORK ORDER #: 12589 CUSTOMER: PHONE: 601 638-2133 BY: DEB ADDRESS: 2840 TIFFENTOWN RD. METER READING: 136170 METER #: 80036877 WORK REQUEST OR COMPLAINT: DATE REQUIRED: 042307 TIME REQUIRED: LEAK - CALLED IN BY DAVID NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE:_____ TIME:____ UNIT:____ TURN OFF ___ TURN ON ___ UNLOCK & LEAVE OFF___ READ & LEAVE ON INSTALL TAP/METER SIZE OLD METER S/N METER READING NEW METER S/N METER READING REMARKS: MATERIALS USED: ____

DATE: 042307 14:24

ACCOUNT: 7 / 1930 -

DATE: 032107 CUST #: CUSTOMER:	4046	CREEK G	OLF COURSE	ACCO				_
ADDRESS:	1566 TI	FENTOWN	RD.	PHONE:	638-93	95	BY:	DEB
METER #:	9636768:	3	METER RE	ADING:	5327	400		
WORK REQUEST OF	R COMPLAINT:	DATE	REQUIRED:	032107	TIME	REQUIR	ED:	
LEAK O	CLOSE TO METER	3.						
NEW ADDRESS:	A Administration					·		
LOCATION:								
REMARKS:			10011111					
		•						
I PERFORMED THE	FOLLOWING:	DATE:		IME:		UNIT:		
TURN OFF							·· · · · · · · · · · · · · · · · · · ·	
READ & LEAVE ON			L TAP/METER		}			
OLD METER S/N			METER					
NEW METER S/N								
REMARKS:								
				······································	*			

ACCOUNT: 7 / 1150 -DATE: 013107 08:04 CUST #: 4043 WORK ORDER #: 12114 CUSTOMER: KENT MAY 1245 TIFFENTOWN RD. PHONE: 638-1472 BY: MAR ADDRESS: METER READING: 263380 METER #: WORK REQUEST OR COMPLAINT: DATE REQUIRED: 013107 TIME REQUIRED: LEAK 1ST HOUSE PAST ALLEN PL - MARY MAY HOUS NEW ADDRESS: LOCATION: REMARKS: I PERFORMED THE FOLLOWING: DATE: TIME: UNIT: TURN OFF TURN ON UNLOCK & LEAVE OFF INSTALL TAP/METER SIZE READ & LEAVE ON___ OLD METER S/N METER READING NEW METER S/N____ METER READING____

MATERIALS USED:

REMARKS: